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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/061,995	02/01/2002	Theodore E. Tedijanto	10.0437	2047

22474 7590 10/29/2007

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EXAMINER	
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ART UNIT	PAPER NUMBER
2616	

MAIL DATE	DELIVERY MODE
10/29/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/061,995	TEDIJANTO ET AL.	
	Examiner	Art Unit	
	Kevin Mew	2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 August 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *32-59* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *32-59* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Final Action

Response to Amendment

1. Applicant's Remarks/Arguments filed on 8/27/2007 have been considered. Claims 1-31 have been canceled by applicant. Claims 32-59 are currently pending.

2. Acknowledgement is made of the amended claims 32 and 59 with respect to the claim objections set forth in the previous Office action. The corrections are acceptable and the claim objections are now withdrawn.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claim 32-35, 40-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iwata (USP 5,687,168) in view of Davies et al. (USP 6,839,767), and in further view of Cortez et al. (USP 7,242,679).

Regarding claim 32, Iwata discloses a method for aggregating at least two of a plurality of physical lines connecting adjacent nodes (**an abstract link abstracts a plurality of physical links connecting adjacent second and fourth switches**, col. 5, lines 23-27 and Figs. 1 and 2) within a network comprising a plurality of nodes (**a network that comprises a plurality of ATM switches**, Fig. 4), the method comprising:

determining line status information (**abstracted link state information is exchanged with adjacent switch and also distributed to all of other switches by flooding with link state update packet**, col. 5, lines 30-36) for at least two of said plurality of physical lines (**the link state information in a plurality of physical links are represented by information of one abstracted link**, col. 4, lines 57-67) connecting adjacent first and said second nodes (**connecting one switch with adjacent switch**, col. 5, lines 23-67), where said line status information includes information regarding available data transmission bandwidth for transferring data between said adjacent first and said second nodes (**available bandwidth**, col. 6, lines 42-51); and

associating at least two a first and second of said plurality of physical lines connecting said first and second nodes (**three physical links 21 to 23 provided between second and fourth switches in Fig. 1 are abstracted into an abstracted link in Fig. 2**, see col. 4, lines 40-45 and elements 21, 22, 23, Fig. 1 and elements 12, 14, Figs. 1 and 2) with one another to create a first aggregated link (**at least two physical links are abstracted into one abstracted link**, col. 4, lines 40-45, 56-67, col. 5, lines 23-27, Figs. 1, 2, 3, 4);

determining aggregate status information for said first aggregated link (**determining abstracted link state information from the link state information in a plurality of physical links**, col. 4, lines 57-64);

broadcasting aggregate status information for said first aggregated link to at least one adjacent node and one non-adjacent node (**abstracted link state information is flooded to all the switches**, col. 5, lines 30-36).

Iwata does not explicitly show said first aggregated link includes the maximum data transmission bandwidth available over a one of said plurality of physical lines within said first aggregated link.

However, Davies discloses an aggregate data flow (element 10, Fig. 1) that includes a guaranteed maximum bandwidth available over a physical link (element 8, Fig. 1) within the aggregate data flow (col. 7, lines 39-52 and abstract).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the link abstraction method of Iwata with the teaching of Davies having an aggregate data flow that includes a maximum bandwidth over a physical link such that said first aggregated link of Davies would include the maximum data transmission bandwidth available over a one of said plurality of physical lines within said first aggregated link.

The motivation to do so is to determine whether to grant or deny a new session request based on considering the bandwidth limit.

Iwata and Davies do not explicitly show the network comprises an optical network; and wherein the method of is implemented as one of part of a signaling and routing protocol for the optical network, a subnetwork connection client module communicating with the optical network, and combinations thereof.

However, Cortez discloses a network of a plurality of switches that exchange link state information using link-state routing and signaling protocols, and examples of such switches are optical switches in which multiple links can also be grouped into an aggregated link (col. 3, lines 25-39, 56-67, col. 4, lines 1-2).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the link abstraction method of Iwata and Davies with the teaching of Cortez in using link-state routing and signaling protocols in a optical network of optical switches, wherein multiple links can also be grouped into an aggregated link such that the combined link abstraction method of Iwata and Davies will show the network comprises an optical network; and wherein the method of is implemented as one of part of a signaling and routing protocol for the optical network, a subnetwork connection client module communicating with the optical network, and combinations thereof.

The motivation to do so is to use the link-state signaling and routing protocol to automatically discover network and set up circuits based on the link state information advertised among the optical switches.

Regarding claim 33, Iwata discloses the method of claim 32 further including the step of using a greedy algorithm to assign traffic across said first aggregated link (**a routing algorithm is used to select the route so that a total of the link costs of respective link toward the destination can be minimized**, col. 6, lines 63-65).

Regarding claim 34, Iwata also discloses the method of claim 32 wherein said first aggregate link consists solely of physical lines directly connecting the first node to the second node (**abstracted link 32 in Fig. 2 consists only of physical links 21 to 23 in Fig. 1**, col. 4, lines 40-45).

Regarding claim 35, Iwata also discloses the method of claim 32 wherein said first aggregate link consists solely of physical lines directly connecting the first node to the second node, (**abstracted link 32 in Fig. 2 consists only of physical links 21 to 23 in Fig. 1**, col. 4, lines 40-45), and there are no intermediate nodes between the first node and the second node (**there are no intermediate nodes connecting between second ATM switch and fourth ATM switch**, see elements 12 and 14, Figs 1 and 2).

Regarding claims 40, Iwata discloses the computer-readable medium over which to perform the method of Claim 32 wherein the first node is a sub network connection network element (**First ATM Switch**, element 11, Figs. 3, 4).

Regarding claims 41, Iwata discloses the computer-readable medium over which to perform the method of Claim 40 wherein the sub network connection network element is a sub network connection switch (**First ATM Switch**, element 11, Figs. 3, 4).

Regarding claim 42, Iwata discloses the computer-readable medium over which to perform the method of Claim 32 comprising the additional step of transmitting the aggregate status information of the first aggregated link to said second node (**exchanging link state information of the abstracted link via exchanging link state update packets**, col. 4, lines 57-67).

Regarding claim 43, Iwata further discloses the method of claim 32 wherein said aggregate status information of said first aggregated link includes a class of service (**the transmission characteristics of the abstracted link**) based upon the line status information of each of said plurality of physical lines associated with said first aggregated link (**is based upon the link state information with respect to each individual links aggregated as the abstracted link**, col. 2, lines 38-45).

Regarding claim 44, Iwata also discloses the method of claim 32 further comprising the step of automatically associating at least two of said plurality of said physical lines with the first aggregated link (**the abstracting portion 67 of the ATM switch is associated with the physical links 62,** see col. 4, lines 57-67, col. 5, lines 47-52 and Fig. 5).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 36-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iwata (USP 5,687,168) in view of Davies and Cortez, and in further view of Sridhar et al. (US Publication 2002/0073226).

Regarding claim 36, Iwata, Davies and Cortez disclose all the aspects of the claimed invention set forth in the rejection of claim 32 above, except fails to explicitly show the step of

associating at least a third of said plurality of physical lines connecting the first node to the second node with a second aggregated link containing line status information on said third physical line.

However, Sridhar discloses a distributed quality of service QoS system that is capable of generating at least two aggregation groups with each aggregation group aggregating at least one physical link (see Fig. 3).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the combined link aggregation/abstraction method of Iwata, Cortez and Davies with the teaching of Sridhar in providing at least two separate aggregation groups with each aggregation group aggregates at least one physical link such that Iwata would associate at least a third of said plurality of physical lines connecting the first node to the second node with a second aggregated link containing line status information on said third physical line.

The motivation to do is to provide different for different aggregation groups in order to satisfy the various data rate requirements of data flows.

Regarding claim 37, Iwata also discloses the method of claim 32 wherein said first aggregate link consists solely of physical lines directly connecting the first node to the second node, **(abstracted link 32 in Fig. 2 consists only of physical links 21 to 23 in Fig. 1**, col. 4, lines 40-45), and there are no intermediate nodes between the first node and the second node **(there are no intermediate nodes connecting between second ATM switch and fourth ATM switch**, see elements 12 and 14, Figs 1 and 2).

Regarding claim 38, Iwata and Davies disclose all the aspects of the claimed invention set forth in the rejection of claim 32 above, except fails to explicitly show the second aggregate link consists of physical lines having a different class of service than said physical lines in said first aggregate link.

However, Sridhar discloses a distributed quality of service QoS system that is capable of generating at least two aggregation groups with each aggregation group providing a different class of service (see Figs. 3 and 6).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the combined link aggregation/abstraction method of Iwata and Davies with the teaching of Sridhar in providing a different quality of service and class identifier for each aggregation group such that the second aggregation group of Iwata consists of physical lines having a different class of service than said physical lines in said first aggregate link

The motivation to do so is to adjust the separate communication policies to adapt to data flows passing through.

Regarding claim 39, Iwata and Davies disclose the method of claim 32, further comprising the steps:

determining the class of service (**the transmission characteristics of the abstracted link**) for said plurality of physical lines connecting the first node to the second node by said status information (**based upon the link state information with respect to each individual links aggregated as the abstracted link**, col. 2, lines 38-45);

prior to associating physical lines for said first aggregated link, selecting said first and second of said plurality of physical lines to be associated with each other in said first aggregate link from a group of said plurality of physical lines having a first class of service (**abstracting first and second physical links 21, 22 into an abstracted link**, col. 4, lines 40-45 and Fig. 2).

Iwata and Davies do not explicitly show creating a second aggregate link to include at least a third of said plurality of physical lines connecting the first node to the second node having a second class of service different from the first class of service.

However, Sridhar discloses a distributed quality of service QoS system that is capable of generating at least two aggregation groups with each aggregation group providing a different class of service (see Figs. 3 and 6).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the combined link aggregation/abstraction method of Iwata and Davies with the teaching of Sridhar in providing a different quality of service and class identifier for each aggregation group such that Iwata will create a second aggregate link to include at least a third of said plurality of physical lines connecting the first node to the second node having a second class of service different from the first class of service.

The motivation to do so is to adjust the separate communication policies to adapt to data flows passing through.

5. Claim 45 is rejected under 35 U.S.C. 103(a) as being unpatentable over Iwata in view of Davies and Cortez, and in further view of Liu et al. (US Publication 2002/0097680).

Regarding claim 45, Iwata, Davies and Cortez disclose all the aspects of the claimed invention set forth in the rejection of claim 32 above, except fails to explicitly show the method of claim 32 further comprising the step of reassociating one of said plurality of physical lines from the first aggregated link to a second aggregated link.

However, Liu discloses a routing method comprising a working aggregate path and a backup aggregate path in which the working-path link is switched from the working-path to the backup path (paragraph 0059).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the combined link aggregation/abstraction method of Iwata and Davies with the teaching of Liu in switching a link from a working path to a backup path such that the link abstraction method of Iwata will reassociate one of said plurality of physical lines from the first aggregated link to a second aggregated link, and designate a physical line associated with said first aggregated link transmits data to said second node.

The motivation to do so is to provision traffic flow and derive spare capacity allocation for the network from the spare backup aggregate path.

6. Claim 46 is rejected under 35 U.S.C. 103(a) as being unpatentable over Iwata in view of Davies and Cortez, and in further view of Gangadharan (US Publication 2005/0163123).

Regarding claim 46, Iwata, Davies and Cortez disclose all the aspects of the claimed invention set forth in the rejection of claim 32 above, except fails to explicitly show the method of claim 32 further comprising the step of designating which of said plurality of physical lines associated with said first aggregated link transmits data to said second node.

However, Gangadharan discloses a switch that aggregates a plurality of links into a single link that anticipates utilizing any of the physical links to transport data traffic (paragraph 0004).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the combined link abstracting system and method of Iwata and Davies with the teaching of Gangadharan such that the method and system of Iwata will designate which of said plurality of physical lines associated with said first aggregated link transmits data to said second node. The motivation to do so is to transmit data over a physical link that provides a high data transfer rate.

7. Claim 47 is rejected under 35 U.S.C. 103(a) as being unpatentable over Iwata in view of Davies and Cortez, and in further view of Linzy (US Publication 2002/0019866).

Regarding claim 47, Iwata, Davies and Cortez discloses all the aspects of the claimed invention set forth in the rejection of Claim 32 above.

Iwata and Davies do not explicitly show the method of Claim 32 wherein at least one of said plurality of physical lines includes optical fiber.

However, Linzy discloses aggregating different optical links into an aggregate link (paragraph 0028).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the link abstracting system and method of Iwata with the teaching of Linzy such that one of the physical links includes an optical fiber link. The motivation to do so is to carry signals of different capacities through a synchronous and flexible optical channel.

8. Claims 48, 53, 57-58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iwata in view of Cortez et al. (USP 7,242,679).

Regarding claim 48, Iwata discloses a method for directing information across a plurality of physical lines and switches in a network, the method, comprising:

storing line status information from said plurality of physical lines connecting a first switch to a second switch adjacent said first switch (**storing link attribute information of each physical link in the abstracted link management table**, Fig. 6), the line status information including at least currently available bandwidth across each of said plurality of physical lines (**the link attribute includes the available bandwidth of each physical link**, col. 6, lines 48-51, 66-67, col. 7, lines 1-3);

grouping at least two of said plurality of physical lines connecting the first switch and the second switch into a first aggregated link (**physical lines 21 to 23 connecting the second ad fourth switches in Fig. 1 are abstracted into an abstracted link 32**, see Fig. 2);

storing aggregate status information about the first aggregated link (**storing abstracted link state information about a first aggregated link in the abstracted link management table**, Fig. 6) including the currently available bandwidth for a one of said plurality of physical lines within said first aggregated link having the highest available bandwidth selected from the line status information for said plurality of physical lines (**including the link attribute of each physical link within the abstracted link such as the available bandwidth of each physical link**, col. 6, lines 48-51, 66-67, col. 7, lines 1-3 and Fig. 6), where said aggregate status information is accessible by remote switches (**information relating to physical links of a abstracted link at one ATM switch are accessible by adjacent ATM switches via the ATM**

switch address table located in the abstracted link management table, col. 6, lines 5-12 and Fig. 6);

receiving a request to send information from said first switch to said second switch (**requesting to send a file transmission**, col. 8, lines 39-47)

Iwata does not explicitly show said request including the amount of required bandwidth for the information; and

directing the information across said first aggregated link only if said stored aggregate status information includes a currently available bandwidth greater than the required bandwidth for the information.

However, Iwata discloses varying the bandwidth to effect abstracting adapted to file transmission and only selecting of a link route having a sufficient bandwidth to go through the abstracted link is necessary to enable the file transmission (col. 8, lines 39-65).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the link abstraction method of Iwata with the teaching of Iwata in only selecting of a link route having a sufficient bandwidth to go through the abstracted link is necessary in order to satisfy the bandwidth requirement for file transmission. The motivation to do so is to enable the selection of an optimal route with sufficient bandwidth in order to satisfy the required bandwidth needed in file transmission.

Iwata does not explicitly show the network comprises an optical network; and wherein the method of is implemented as one of part of a signaling and routing protocol for the optical

network, a subnetwork connection client module communicating with the optical network, and combinations thereof.

However, Cortez discloses a network of a plurality of switches that exchange link state information using link-state routing and signaling protocols, and examples of such switches are optical switches in which multiple links can also be grouped into an aggregated link (col. 3, lines 25-39, 56-67, col. 4, lines 1-2).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the link abstraction method of Iwata with the teaching of Cortez in using link-state routing and signaling protocols in a optical network of optical switches, wherein multiple links can also be grouped into an aggregated link such that the link abstraction method of Iwata will show the network comprises an optical network; and wherein the method of is implemented as one of part of a signaling and routing protocol for the optical network, a subnetwork connection client module communicating with the optical network, and combinations thereof.

The motivation to do so is to use the link-state signaling and routing protocol to automatically discover network and set up circuits based on the link state information advertised among the optical switches.

Regarding claim 53, Iwata discloses a method for directing information across a plurality of physical lines and switches in a network, the method, comprising:

grouping at least two of said plurality of physical lines connecting the first switch and the second switch adjacent said first switch into a first aggregated link (**physical lines 21 to 23**

connecting the second and fourth switches in Fig. 1 are abstracted into an abstracted link 32, see Fig. 2);

storing aggregate status information about the first aggregated link (**storing abstracted link state information about a first aggregated link in the abstracted link management table**, Fig. 6) including the currently available bandwidth for a one of said plurality of physical lines within said first aggregated link having the highest available bandwidth selected from the line status information for said plurality of physical lines (**including the link attribute of each physical link within the abstracted link such as the available bandwidth of each physical link**, col. 6, lines 48-51, 66-67, col. 7, lines 1-3 and Fig. 6), where said aggregate status information is accessible by remote switches (**information relating to physical links of a abstracted link at one ATM switch are accessible by adjacent ATM switches via the ATM switch address table located in the abstracted link management table**, col. 6, lines 5-12 and Fig. 6);

receiving a request to send information from said first switch to said second switch (**receiving a request to send a file transmission**, col. 8, lines 39-47)

Iwata does not explicitly show said request including the amount of required bandwidth for the information; and

directing the information across said first aggregated link only if said stored aggregate status information includes a currently available bandwidth greater than the required bandwidth for the information.

However, Iwata discloses varying the bandwidth to effect abstracting adapted to file transmission and only selecting of a link route having a sufficient bandwidth to go through the abstracted link is necessary to enable the file transmission (col. 8, lines 39-65).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the link abstraction method of Iwata with the teaching of Iwata in only selecting of a link route having a sufficient bandwidth to go through the abstracted link is necessary in order to satisfy the bandwidth requirement for file transmission. The motivation to do so is to enable the selection of an optimal route with sufficient bandwidth in order to satisfy the required bandwidth needed in file transmission.

Iwata does not explicitly show the network comprises an optical network; and wherein the method of is implemented as one of part of a signaling and routing protocol for the optical network, a subnetwork connection client module communicating with the optical network, and combinations thereof.

However, Cortez discloses a network of a plurality of switches that exchange link state information using link-state routing and signaling protocols, and examples of such switches are optical switches in which multiple links can also be grouped into an aggregated link (col. 3, lines 25-39, 56-67, col. 4, lines 1-2).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the link abstraction method of Iwata with the teaching of Cortez in using link-state routing and signaling protocols in a optical network of optical switches, wherein multiple links can also be grouped into an aggregated link such that the link abstraction

method of Iwata will show the network comprises an optical network; and wherein the method of is implemented as one of part of a signaling and routing protocol for the optical network, a subnetwork connection client module communicating with the optical network, and combinations thereof.

The motivation to do so is to use the link-state signaling and routing protocol to automatically discover network and set up circuits based on the link state information advertised among the optical switches.

Regarding claim 57, Iwata discloses the method of claim 53 wherein said first aggregate link consists solely of physical lines directly connecting the first node to the second node (**only physical lines 21 to 23 connecting the second and fourth switches in Fig. 1 are abstracted into an abstracted link 32,** see Fig. 2).

Regarding claim 58, Iwata discloses the method of claim 53 wherein said first aggregate link consists solely of physical lines directly connecting the first node to the second node, and wherein there are no intermediate nodes between the first node and the second node (**only physical lines 21 to 23 connecting the second and fourth switches in Fig. 1 are abstracted into an abstracted link 32 and there are no intermediate nodes between the second and fourth switches,** see Fig. 2).

9. Claims 49 and 54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iwata in view of Cortez et al. (USP 7,242,679), and in further view of Hauris et al. (USP 5,422,883).

Regarding claims 49, 54, the combined method of Iwata and Cortez discloses the method of claims 48, 53, further comprising:

selecting a physical line from said plurality of physical lines within the first aggregated link by determining a group of physical lines having a currently available bandwidth at least as great as the required bandwidth for the information (**selecting an optimal physical link such that only a link with sufficient bandwidth will be selected to transmit data file between switches**, col. 8, lines 39-47, 57-65); and

directing the information across said optimal physical line (**transmitting file through the optimal link**, col. 8, lines 57-65).

Iwata does not explicitly show selecting an optimal physical line from said determined group having the least current available bandwidth.

However, Hauris discloses determining a method of channel allocation by determining an optimal route using the only minimum bandwidth necessary (col. 3, lines 1-4).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the link abstraction method of Iwata with the teaching of Hauris in optimal route based on using the minimum bandwidth necessary such that Iwata will select an optimal physical line from said determined group having the least current available bandwidth.

The motivation to do so is to free up the unnecessary channel bandwidth resource for other data communications.

10. Claims 50-51, 55-56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iwata in view Cortez et al. (USP 6,424,679) and in further view of Sridhar et al. (US Publication 2002/0073226 A1).

Regarding claims 50, 55, the combined method of Iwata and Cortez discloses the method of claims 48, 53, further comprising:

storing aggregate status information about the first aggregated link (**storing abstracted link state information about a first aggregated link in the abstracted link management table**, Fig. 6) including the currently available bandwidth for a one of said plurality of physical lines within said first aggregated link having the highest available bandwidth selected from the line status information for said plurality of physical lines (**including the link attribute of each physical link within the abstracted link such as the available bandwidth of each physical link**, col. 6, lines 48-51, 66-67, col. 7, lines 1-3 and Fig. 6), where said aggregate status information is accessible by remote switches (**information relating to physical links of a abstracted link at one ATM switch are accessible by adjacent ATM switches via the ATM switch address table located in the abstracted link management table**, col. 6, lines 5-12 and Fig. 6).

Iwata does not explicitly show grouping at least a further two of said plurality of physical lines connecting the first switch and the second switch into a second aggregated link;

storing aggregate status information about the second aggregated link; and

assigning the plurality of physical lines to the first aggregated link or the second aggregated link by placing physical lines having a first class of service in the first aggregated link and placing physical lines having a second class of service in the second aggregated link.

However, Sridhar discloses a distributed quality of service QoS system that is capable of generating at least two aggregation groups with each aggregation group providing a different class of service (see Figs. 3 and 6).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the link aggregation/abstraction method of Iwata with the teaching of Sridhar in providing a different quality of service and class identifier for each aggregation group such that the second aggregation group of Iwata consists of physical lines having a different class of service than said physical lines in said first aggregate link

The motivation to do so is to adjust the separate communication policies to adapt to data flows passing through.

Regarding claims 51, 56, Iwata discloses a method of claim 50, 53, except fails to disclose the method comprising:

receiving a class of service request within the request to send information between said first switch and said second switch; and

selecting an optimal aggregated link from said first aggregated link and second aggregated link by selecting an aggregate link that matches the class of service request in said request to send information.

However, Sridhar discloses a distributed quality of service QoS system that is capable of generating at least two aggregation groups with each aggregation group aggregating at least one physical link (see Fig. 3) and accepting and handling a class of service request (in-order delivery

of packets, paragraph 0041) by selecting an aggregated path with the appropriate QoS processing.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the link aggregation/abstraction method of Iwata with the teaching of Sridhar in selecting an optimal aggregation group to process to a particular class of service request.

The motivation to do is to provide different aggregation groups in order to handle the various data flow requirements.

11. Claim 52 is rejected under 35 U.S.C. 103(a) as being unpatentable over Iwata in view of Cortez et al. (USP 6,424,679) and Sridhar et al. (US Publication 2002/0073226 A1), and in further view of Hauris et al. (USP 5,422,883).

Regarding claim 52, the combined method of Iwata, Cortez and Sridhar discloses the method of claim 51, further comprising:

selecting a physical line from said plurality of physical lines within the first aggregated link by determining a group of physical lines having a currently available bandwidth at least as great as the required bandwidth for the information (**selecting an optimal physical link such that only a link with sufficient bandwidth will be selected to transmit data file between switches**, col. 8, lines 39-47, 57-65); and

directing the information across said optimal physical line (**transmitting file through the optimal link**, col. 8, lines 57-65).

The combined method of Iwata and Sridhar does not explicitly show selecting an optimal physical line from said determined group having the least current available bandwidth.

However, Hauris discloses determining a method of channel allocation by determining an optimal route using the only minimum bandwidth necessary (col. 3, lines 1-4).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the link abstraction method of Iwata with the teaching of Hauris in optimal route based on using the minimum bandwidth necessary such that Iwata will select an optimal physical line from said determined group having the least current available bandwidth.

The motivation to do so is to free up the unnecessary channel bandwidth resource for other data communications.

12. Claim 59 is rejected under 35 U.S.C. 103(a) as being unpatentable over Iwata in view of Hauris et al. (USP 5,422,883), and in further view of Cortez et al. (USP 7,242,679).

Regarding claim 59, Iwata discloses a method for directing information across a plurality of physical lines and switches in a network, the method, comprising:

grouping at least two of said plurality of physical lines connecting a first of said switches and a second of said switches into a first aggregated link (**physical lines 21 to 23 connecting the second and fourth switches in Fig. 1 are abstracted into an abstracted link 32**, see Fig. 2);

storing aggregate status information about the first aggregated link (**storing abstracted link state information about a first aggregated link in the abstracted link management table**, Fig. 6) including the currently available bandwidth for a one of said plurality of physical lines within said first aggregated link having the highest available bandwidth selected from the

line status information for said plurality of physical lines (**including the link attribute of each physical link within the abstracted link such as the available bandwidth of each physical link**, col. 6, lines 48-51, 66-67, col. 7, lines 1-3 and Fig. 6), where said aggregate status information is accessible by remote switches (**information relating to physical links of a abstracted link at one ATM switch are accessible by adjacent ATM switches via the ATM switch address table located in the abstracted link management table**, col. 6, lines 5-12 and Fig. 6);

receiving a request to send information from said first switch to said second switch (**receiving a request to send a file transmission**, col. 8, lines 39-47)

Iwata does not explicitly show said request including the amount of required bandwidth for the information and the minimum class of service required; and

directing the information across said first aggregated link only if said stored aggregate status information includes a currently available bandwidth greater than the required bandwidth for the information.

However, Iwata discloses varying the bandwidth to effect abstracting adapted to file transmission and only selecting of a link route having a sufficient bandwidth to go through the abstracted link is necessary to enable the file transmission (col. 8, lines 39-65).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the link abstraction method of Iwata with the teaching of Iwata in only selecting of a link route having a sufficient bandwidth to go through the abstracted link is necessary in order to satisfy the bandwidth requirement for file transmission. The motivation to

do so is to enable the selection of an optimal route with sufficient bandwidth in order to satisfy the required bandwidth needed in file transmission.

Iwata also discloses selecting a physical line from said plurality of physical lines within the first aggregated link by determining a group of physical lines having a currently available bandwidth at least as great as the required bandwidth for the information (**selecting an optimal physical link such that only a link with sufficient bandwidth will be selected to transmit data file between switches**, col. 8, lines 39-47, 57-65); and

directing the information across said optimal physical line (**transmitting file through the optimal link**, col. 8, lines 57-65).

Iwata does not explicitly show selecting an optimal physical line from said determined group having the least current available bandwidth and having at least the minimum class of service required.

However, Hauris discloses determining a method of channel allocation by determining an optimal route using the only minimum bandwidth necessary (col. 3, lines 1-4).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the link abstraction method of Iwata with the teaching of Hauris in optimal route based on using the minimum bandwidth as the minimum class of service necessary such that Iwata will select an optimal physical line from said determined group having the least current available bandwidth.

The motivation to do so is to free up the unnecessary channel bandwidth resource for other data communications.

Iwata and Hauris do not explicitly show the network comprises an optical network; and wherein the method of is implemented as one of part of a signaling and routing protocol for the optical network, a subnetwork connection client module communicating with the optical network, and combinations thereof.

However, Cortez discloses a network of a plurality of switches that exchange link state information using link-state routing and signaling protocols, and examples of such switches are optical switches in which multiple links can also be grouped into an aggregated link (col. 3, lines 25-39, 56-67, col. 4, lines 1-2). .

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the link abstraction method of Iwata and Hauris with the teaching of Cortez in using link-state routing and signaling protocols in a optical network of optical switches, wherein multiple links can also be grouped into an aggregated link such that the combined link abstraction method of Iwata and Davies will show the network comprises an optical network; and wherein the method of is implemented as one of part of a signaling and routing protocol for the optical network, a subnetwork connection client module communicating with the optical network, and combinations thereof.

The motivation to do so is to use the link-state signaling and routing protocol to automatically discover network and set up circuits based on the link state information advertised among the optical switches.

Response to Arguments

13. Applicant's Remarks/Arguments filed on 8/27/2007 with respect to claims 32-35, 40-44 have been fully considered but are moot in view of the new ground(s) of rejection.

Conclusion

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Mew whose telephone number is 571-272-3141. The examiner can normally be reached on 9:00 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi Pham can be reached on 571-272-3179. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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CHI PHAM
SUPERVISORY PATENT EXAMINER
10/25/07

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